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Efficiency and patient satisfaction in Norwegian hospitals

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Abstract

Objective: To analyze the effects of a reimbursement reform on somatic hospitals' efficiency and quality, measured as patient experiences. By the reform a capitation-based block grant system was replaced by an activity-based system. **Methods:** Data on efficiency and patient satisfaction from 213 hospital departments before (1996) and after (1998, 2000 and 2003) the reform were analyzed using a mixed model approach. The efficiency ratings were developed at the level of the hospital using data envelopment analysis, while the patient satisfaction scores were at department level data from recent patient surveys. **Results:** Both technical efficiency and patient satisfaction increase after the reform. **Discussion:** We interpret increasing technical efficiency as a direct effect of the reimbursement reform. Higher patient satisfaction is understood as an effect of lower waiting time, which in its turn is an effect of the introduction of activity-based financing.

Introduction

During the past 20 years, financing of hospitals in the OECD countries has changed. Following the introduction of the prospective payment system (PPS) in the USA in 1983, several European countries have introduced schemes for activity-based funding (ABF) [1,2]. In contrast to the US reform that implied change from a fee-for-service system to PPS, reforms in Europe have often implied changes from global budgets to ABF, i.e. between two different types of PPS. Only a few evaluations of European reimbursement reforms have been published, primarily focusing on efficiency [3,4,5] and with little emphasis on its association with quality of care.

Quality of health care can be operationalized in different ways. During the last decade, healthcare managers, politicians, and other decision makers have emphasized the importance of the patient perspective as an indicator of quality of health care. In many countries, surveys of patient satisfaction and patient experiences with hospitals are carried out regularly, and the results are made available to the public together with other indicators of health care quality [6]. Assessment of patient experiences can have different purposes: (a) describing health care from the patient's point of view; (b) measuring the process of care, thereby both identifying problem areas and evaluating improvement efforts; and (c) evaluating the outcome of care [7,8]. Typically, variation in patient experiences between different hospital units is thought to reflect differences in efficiency and other organizational factors. However, the amount of literature investigating variability in patient experiences with hospital care and its association with organizational factors is limited.

In this article, we analyze the effects of a reimbursement reform in Norwegian somatic hospitals both on hospitals' efficiency and on their quality, measured as patient experiences with hospital care. The stated objective of the reimbursement reform implemented in 1997

was to increase hospital production and shorten waiting lists [9]. The reform implied a change from a capitation-based block grant system to a grant system that combined block grants and ABF based on the Diagnosis Related Groups (DRG)-system [5]. The split between DRG-based reimbursement and block grants has altered over the years; it was 30/70 in 1997, 40/60 in 1998, 50/50 between 1999 and 2002, and 60/40 in 2003. Under the ABF scheme, the central government has channeled the DRG-based reimbursement and the block grants to the hospital owners, the county councils or, from 2002, the Regional Health Enterprises [10]. Hospital owners have been free to design the funding mechanism for their own hospitals. However, it turned out that 15 of Norway's 19 county councils implemented ABF at the same time as the central government introduced the reimbursement reform. The remaining counties followed during the following three years.

Mainstream economics often assumes a trade-off between efficiency and quality in hospital production. Low-powered financing systems, i.e. reimbursement systems with weak economic incentives, may give rise to serious inefficiencies in the hospital system in parallel with a perception of high-quality health care services. High-powered prospective payment systems on the other hand increase efficiency, but may generate severe quality problems due to creaming, skimping or dumping [11]. To our knowledge, there are no studies that simultaneously analyze the effects of reimbursement reforms on hospitals' efficiency and quality, measured as patient experiences with hospital care. In this paper, we extend the study by Biørn *et al.* [5] on the impact of the ABF reform on efficiency to include also data on patient experiences with hospital care.

Materials and methods

Sample and study design

Annual data on costs and production are available for all somatic hospitals in Norway between 1992 and 2003, while data on patient satisfaction are available for 213 hospital departments before (1996) and after (1998, 2000, and 2003) the reform. We used cost and production data to calculate a common efficiency frontier for all hospitals and years by data envelopment analysis (DEA). For hospitals with available patient survey data, we used these efficiency measures in further regression analyses. In two separate regression models, we analyzed variations in efficiency and patient experiences with hospital care as a function of type of reimbursement system and other relevant variables.[1]

Assessment of efficiency

DEA handles settings with multiple inputs and outputs more easily than other efficiency models [12]. The approach is also flexible, as it does not require a specific functional form for the technology or specific distributional assumptions on the efficiency measure. Following [5], we developed two efficiency measures, one for technical efficiency and one for cost efficiency. In both measures hospital output was described by two variables: (1) inpatient care, defined as the number of discharges adjusted for case-mix by weighting discharges by DRG-weights, and (2) outpatient care, defined as the number of outpatient visits weighted by the government's reimbursement per visit. In assessing technical efficiency, hospital inputs were measured as: (1) physician FTEs (full-time equivalents) per year; (2) other labor FTEs,

[1] In an alternative specification patient satisfaction was included in the output vector of the DEA. However, the variation in efficiency far outnumbers the variation in satisfaction, making the results from the combined efficiency–quality measure similar to the results from the analysis of efficiency.

indicating all other labor than physicians; and (3) medical expenses, defined as the costs related to material and equipment measured in NOK1000s. In the assessment of cost efficiency, we used *total operating costs* to measure hospital input.

We calculated all variables describing revenues and expenses in 2003 prices. Norwegian hospital cost data did not include capital costs until 2002. Consequently, in our analysis we excluded capital costs also for 2003 to facilitate comparisons over years. In line with [13] and using annual data for all somatic hospitals (N= ~48) from the period 1992–2003, we calculated an intertemporal efficiency frontier to compare efficiency over time. DEA produces measures of relative efficiency on a 0 (lowest) to 1 (highest) scale. Average efficiency scores are depicted in Figure 1.

(Figure 1)

The average cost efficiency was 0.80 in the period, indicating that the average hospital's efficiency lagged 20% behind the efficiency frontier. For technical efficiency, similar numbers were 0.74 and 26%. Technical efficiency increased markedly from 1996 to 1998 and continued to increase after 1999. Cost efficiency fell slightly from 1995 to 2001 followed by an increase from 2001 to 2002.

Assessment of patient experiences with hospital care

Data on patient experiences with hospital care were derived from four national patient surveys, conducted in 1996, 1998, 2000, and 2003. The surveys included patients over 15 years of age who were discharged alive from departments of surgery or internal medicine during the autumn of the respective years. In 1996, 1998, and 2000 these patients received a

questionnaire six weeks after hospitalization [14]. In 2003, this period was reduced to three weeks. No response within four weeks triggered one reminder.

The sample consisted of 13–57 hospitals. Overall response rates ranged from 55% to 58%. Five hospitals participated in all four surveys, 13 hospitals participated in three years, and 11 hospitals participated twice (Table 1).

(Table 1)

Patient experiences with hospital care were assessed using the Patient Experiences Questionnaire (PEQ). A recent study evaluating the reliability of the PEQ indicated satisfactory internal consistency and short-term repeatability for all scales [14]. All 38 items of the PEQ use a 10-point ordinal format with two anchoring phrases. The items are aggregated into 10 summary scales with scores varying between 0 and 100, with higher scores indicating more positive experiences. The PEQ scales describe patients' assessment of general satisfaction, hospital equipment, organization, communication, contact with next-of-kin, nursing services, doctor services, information medication, information examinations, and information about future complaints. The present paper focuses on four dimensions of patient experiences: (1) General Satisfaction, the patient's overall confidence and satisfaction with hospital stays; (2) Information, combining the four summary scales on communication and the provision of information by hospital staff; (3) Nursing Services, indicating experiences with nurses' care and professional competence; and (4) Doctor Services; describing patient experiences with doctors' care and competence.

Individual mean scores on the four domains were aggregated to the level of hospital departments, grouped as surgical or internal medicine departments, and used in subsequent

analyses. Initially, 213 medical and surgical departments were included in the analysis (26 in 1996, 42 in 1998, 32 in 2000, and 113 in 2003). Figure 2 depicts the overall average scores on the four dimensions of patient experiences with hospital care across time.

(Figure 2)

The respondents on average reported relatively positive scores on all four dimensions. The scores increased slightly over time indicating more positive experiences with hospitals' services. Highest average scores were found for nursing services and lowest for information.

Theoretical framework and variables

We analyzed variations in technical and cost efficiency, as well as in all four dimensions of patient experiences with hospital care. Theoretical expectations were derived from a model documented by Biørn *et al.* [5]. The model relates economic parameters such as hospitals' budget size and types of reimbursement systems to efficiency and quality. Stated simply, the theoretical model shows that, under certain assumptions, hospitals with large budgets have more slack resources than hospitals with tight budgets. Therefore, they have more resources available for nonproduction activity, such as research, teaching, quality improvements or leisure. Hence, we expect a negative effect of budget size on hospital efficiency and a positive effect of budget size on quality measured by the four dimensions of patient experiences. The model also shows that (partly) replacing a global budget with revenue per treatment could shift internal resources from nonproduction activity to production activity. Hence, this substitution effect could cause an increase in efficiency. If the increase in production leads to increased demand for labor, the increase in technical efficiency should be higher than the increase in cost efficiency, because increased demand for labor may lead to cost increases. The effects of ABF on quality measured as patient experiences with hospital care are

undetermined because quality is affected in two ways, by the substitution effect that, *cet par*, could lead to a shift in internal resources away from information and care and thereby to less positive experiences, and by the income effect that leads to higher production, lower waiting time, and thereby more positive experiences. While the direct effect on patient experiences with hospital care of the introduction of ABF is theoretically undetermined, we expected a positive direct effect on waiting time.

The explanatory variables included in the model are listed and defined in Table 2.

(Table 2)

The size of the hospital budget was described as hospital revenues per hospital bed (BUD). As discussed earlier, outpatient revenues were included in the output vector in the efficiency analyses to account for numbers of outpatients. We were forced to do this because data on the number of outpatients are missing for many of the large hospitals in the period we are analyzing. However, outpatient revenues had both a price and a volume component. We corrected for this by including a variable measuring outpatient revenues as share of total hospital revenues (OUT).

Waiting time (WAITTIME) has been reduced significantly in the period we analyze. This is both a result of introducing ABF in 1997 and an increase in aggregate hospital revenues and thereby production in the period. We include WAITTIME in the analyses of patient satisfaction and expect a negative relationship: longer waiting time reduces satisfaction. Waiting time was available at the hospital level from 1998. We estimated waiting time for 1996 by extrapolation from 1998 and 1999 data.

Finally, we included dummy variables describing hospital and department type to account for variations in case mix and structural differences. DEPT describes the type of department where the patient is treated and is included in the analysis of patient satisfaction (efficiency measures are produced with the hospital as a unit). Hospital types are described by five dummy variables: university hospital (UNIV), central hospital (CENTRH), county hospital with central hospital departments (CCH), county hospital (COUNTYH), and local hospital (LOCALH). The last category, local hospital, served as reference category. Descriptive statistics for explanatory variables in the model are presented in Table 3.

(Table 3)

Analysis

Although the efficiency data constitute a complete (balanced) panel data set for 1992–2003, we let the less complete satisfaction data set decide the sample of hospitals and departments included in the regression analyses. The data set used in the regression analysis can then best be described as an unbalanced panel data set. Only five hospitals (10 departments) are present in the data set for all four years, hence the data set resembles a pooled cross-section data set. The total number of departments with valid data for both efficiency and patient satisfaction is 184. Efficiency measures are, however, at the hospital level, and therefore the real number of units in the analysis of efficiency is 92.

Panel data allow us to distinguish *within* effects, i.e. effects for a specific hospital between different years, from the *between* effects, i.e. differences between the hospitals in a specific year. The within effect can be captured by a fixed effect model with dummies for hospitals. However, as our panel data set at most consists of four periods, including dummies for hospitals, will capture most of the heterogeneity in the data. We therefore include dummies

for hospital type and not for hospital (Model 1). We also include dummies for years in some of the analysis to account for time-specific effects such as wage variations and health care reforms implemented at specific times (Model 2). The reported results can then be denoted 'within hospital type and years' estimates, as the only variation they utilize is the variation that remains when the variation between hospital type and between years is accounted for. Because of the limited time span of the data set, we concentrate on static models.

We used FrischDEA (developed at the Ragnar Frisch Centre for Economic Research, University of Oslo) to calculate the efficiency measures, and SAS (SAS Institute Inc., Cary, NC) for all other analyses. All regression analyses are based on maximum likelihood methods. We chose a 10% confidence interval using two-sided tests.

Results

The correlations between the two efficiency measures (Pearson's r = 0.60) and between our four variables describing satisfaction (Pearson's r in the range of 0.43 to 0.75) indicate that the efficiency variables and satisfaction variables describe similar dimensions of hospital output (Table 4).

(Table 4)

There was a positive and significant correlation between technical efficiency and patients' satisfaction with information and a significant negative correlation between cost efficiency and satisfaction with physicians. However, in general we found low correlations between

efficiency and the measures of satisfaction, indicating no direct contradiction between efficiency and patient satisfaction, as measured here.

Introduction of ABF affected technical efficiency positively and significantly while the effect on cost efficiency was insignificant (Table 5). Effects of the introduction on ABF on technical efficiency were 4% in the fixed effect model (Model 1) and 5% in the fixed effect model where dummies for years are included (Model 2).

(Table 5)

Budget size (BUD) was not associated with efficiency in this reduced sample of hospitals. The relative size of outpatient production (OUT) affected both cost efficiency and technical efficiency positively. In addition, the effects of the dummies describing hospital types produce stable estimates. In general, we find higher efficiency in local and county hospitals than in hospitals of other types.

In contrast to our hypothesis, we fond negative but in-significant effects of budget size on the dimensions of patient satisfaction (Table 6). Neither did the introduction of ABF show stable and significant effects on dimensions of patient satisfaction.

(Table 6)

Of our explanatory variables, only waiting time (WAITTIME) for elective treatment had a stable and significant effect on patient satisfaction. A reduction in waiting time of one month increased general satisfaction with 0.13–0.14 units. Variables explaining variation in satisfaction with nursing services showed a somewhat different picture than for the other

satisfaction variables. There was a significant negative effect of the relative share of outpatients—the higher the relative number of outpatients, the lower is satisfaction with nursing services.

Discussion

Our main research question was: How does the introduction of ABF affect hospital efficiency and quality measured as patient experiences with hospital care? In accordance with our expectations and earlier analysis, we found a positive effect of ABF on technical efficiency also in this reduced sample. The effects on technical efficiency were slightly higher than in [5], probably because of a somewhat different specification of the empirical model. The effect of ABF on cost efficiency was insignificant. In line with [5] we interpret this as an effect of tight labor markets for health personnel. The tight markets for physicians and nurses imply that marginal resources could only be mobilized by higher wage compensation.

Budget size (BUD) was not associated with efficiency in this reduced sample of hospitals. A possible explanation is that the effects of BUD are captured by the dummies describing hospital type. Reestimation of the model without dummies for hospital type confirms this. This alternative specifications indicate a negative relationship between budget size and cost efficiency.

The result indicating higher efficiency in local and county hospitals than in hospitals of other types should probably be explained by two factors: differences in teaching load and research activities, and differences in the volume of acute services. We do not, however, have data to test these propositions for this sample of hospitals.

Our theoretical expectations were inconclusive regarding the direct effects of ABF on patient satisfaction. Two effects, the substitution effect and the revenue effect, go in different directions. One interpretation of the results from the statistical analysis is that the two effects sum to zero as we found an no direct effect of the introduction of ABF on patient satisfaction.

We did, however, find stable and significant effects of waiting time to elective treatment on three of the four domains of patient satisfaction, with increased patient satisfaction as waiting time was reduced. This relationship was present for general satisfaction as well as for experiences with information and physicians' competence. One possible explanation of the effects on three of the four patient survey variables is that waiting time affects the patients' general attitude towards the hospital. Because waiting time is strongly affected by the introduction of ABF, the relationship between waiting time to elective treatment and satisfaction is of particular interest. The introduction of ABF was accompanied by a strong signal to hospitals to increase the number of treated patients in order to reduce politically annoying waiting lists [5]. As a means to increase production, hospital data indicate that ABF has been successful. Inpatient production measured in DRG-equivalents had an average annual increase of 3.2% between 1997 and 2000, compared with 2.0% per year between 1992 and 1996. Thus, the ABF may have affected patient satisfaction positively by an indirect effect through waiting time.

Variables explaining variation in patient experiences with nursing services showed a different picture than for the other patient survey variables. We found a significant negative effect of the relative share of outpatients—the higher the relative number of outpatients, the lower was the satisfaction with nursing services. A possible interpretation is that nurses interact only cursorily with patients in outpatient clinics.

Two methodological remarks should be added. First, the variation in patient satisfaction (as well as other patient outcomes) seems to a larger extent related to respondents' characteristics than to the resources available for treatment [15, 16]. An alternative approach to the analysis conducted in the present paper would be to use individual patient data to analyze the effects of the structural factors that have been the focus of this article. Second, a limitation of the present study is that only five hospitals had complete four-year data on patient experiences with hospital care. Today, dimensions of patient experiences with hospital care are registered as national indicators of quality of care for all hospitals in Norway on a regular basis. Future studies can therefore utilize complete panel data to evaluate the effects of hospital reforms on hospital efficiency and quality simultaneously.

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Figure 1. Average efficiency, 1992–2003

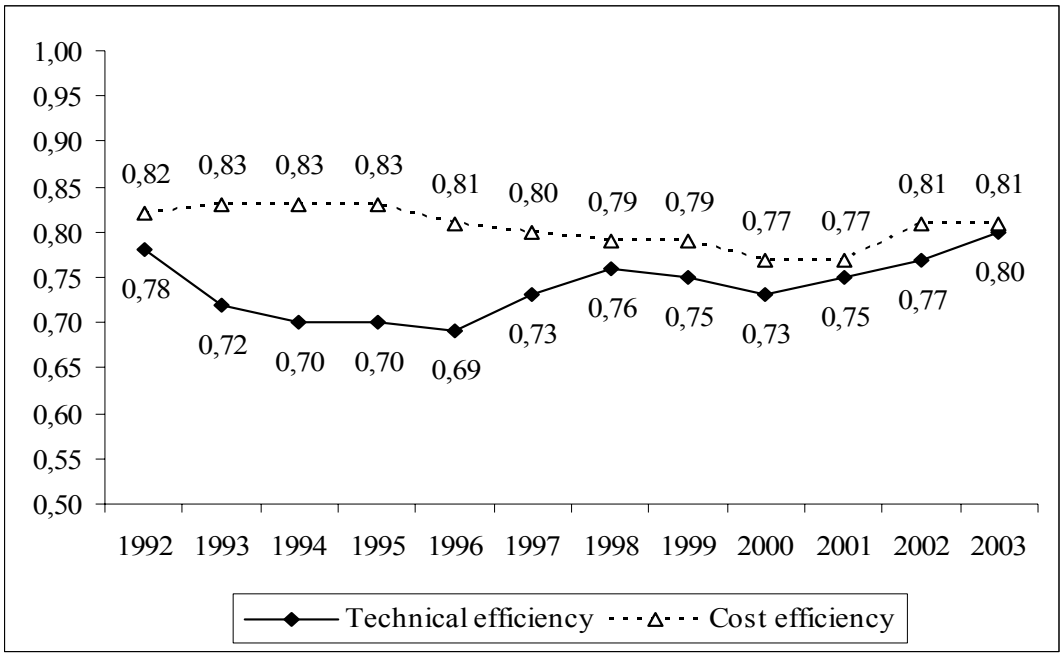

Figure 2. Average patient satisfactions, 1996–2003

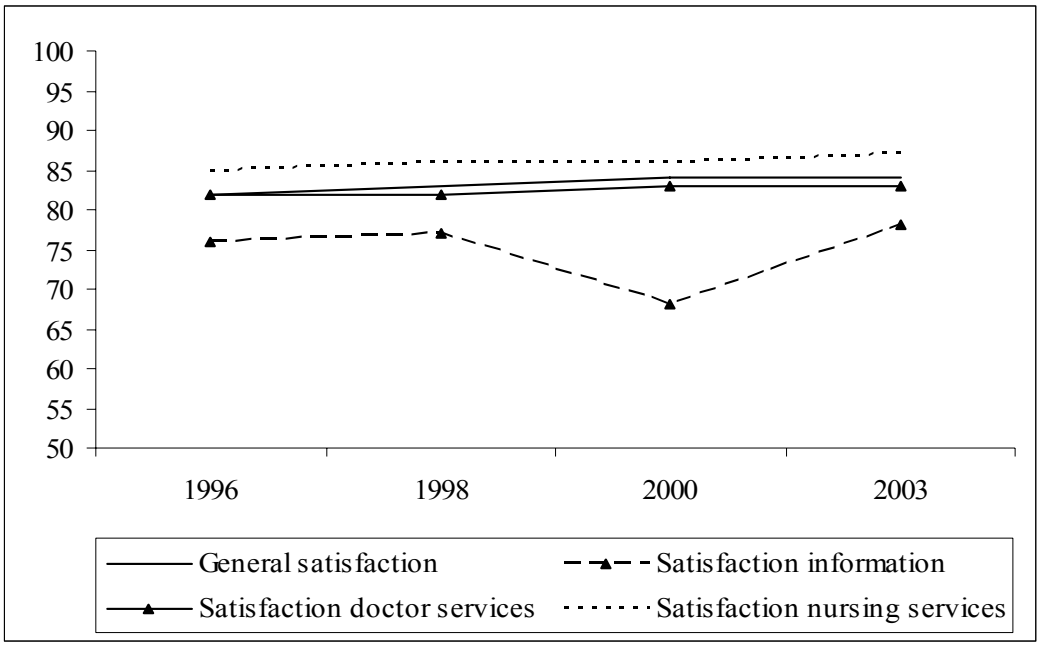

Table 1. Number of hospitals, departments, and patients in the patient satisfaction surveys

	1996	1998	2000	2003	Total
Hospitals	13	21	16	57	107
Departments	26	42	32	113	213
Responding patients	8799	13672	7608	10887	40966

Table 2. Definitions of explanatory variables

Variable	Operations
BUD	Total hospital revenues in million Norwegian crowns/Number of beds
OUT	(Outpatient revenues/Total hospital revenues)*100
ABF	Dummy variable: 1 = activity-based contract is implemented in the current year, 0 = otherwise
DEPT	Dummy variable: 1 = surgical department, 0 = medical department
WAITTIME	Waiting time in months for elective patients
UNIVH	Dummy variable: 1 = university hospital, 0 = otherwise
CENTRALH	Dummy variable: 1 = central hospital, 0 = otherwise
CHHX	Dummy variable: 1 = county hospitals with central hospital units, 0 = otherwise
CHH	Dummy variable: 1 = county hospital, 0 = otherwise
LOCALH	Dummy variable: 1 = hospital without acute admissions, 0 = otherwise. LOCAL serves as reference category.
Y1996/Y1998/ Y2000/Y2003	Dummies for different years coded 1 for the actual year, 0 otherwise. Y = 2003 serves as reference category.

Table 3. Descriptive statistics for explanatory variables. Mean (std.dev).

	1996	1998	2000	2003
BUD	1.85	2.03	2.35	2.73
	(0.16)	(0.25)	(0.38)	(0.55)
OUT	10.14	11.05	8.83	8.56
	(3.01)	(2.43)	(2.46)	(2.51)
ABF	0.00	0.83	1.00	1.00
	(0.00)	(0.38)	(0.00)	(0.00)
DEPT	0.50	0.50	0.50	0.50
	(0.51)	(0.51)	(0.51)	(0.51)
WAITTIME	9.79	9.08	8.79	5.41
	(4.58)	(4.47)	(5.43)	(4.87)
UNIVH	0.25	0.17	0.14	0.10
	(0.44)	(0.38)	(0.36)	(0.31)
CENTRALH	0.50	0.39	0.21	0.27
	(0.51)	(0.49)	(0.42)	(0.45)
CCH	0.08	0.17	0.21	0.15
	(0.28)	(0.37)	(0.42)	(0.35)
COUNTYH	0.08	0.06	0.07	0.15
	(0.28)	(0.23)	(0.26)	(0.35)

Table 4. Correlation matrix—dependent variables

	Technical efficiency	Cost efficiency	General satisfaction	Satisfaction: Information	Satisfaction: Doctor services	Satisfaction: Nursing services
Technical efficiency	1.00					
Cost efficiency	0.60***	1.00				
General Satisfaction	0.00	–0.05	1.00			
Satisfaction: Information	0.17**	0,05	0.48***	1.00		
Satisfaction: Doctor Services	-0.03	–0.13*	0.75***	0.48***	1.00	
Satisfaction: Nursing Services	0.03	–0.08	0.70***	0.43***	0.55***	1.00

* = $p \leq 0.1$ ** = $p \leq 0.05$ *** = $p \leq 0.01$

Table 5. Analyses of efficiency. Estimates (standard error)

	Cost efficiency		Technical efficiency	
	Model 1	Model 2	Model 1	Model 2
Intercept	0.63**	0.65***	0.46***	0.49***
	(0.03)	(0.05)	(0.04)	(0.05)
BUD	0.01	–0.00	0.03**	0.02
	(0.01)	(0.01)	(0.01)	(0.01)
OUT	0.02**	0.02***	0.03***	0.03***
	(0.00)	(0.00)	(0.00)	(0.00)
ABF	–0.02	–0.01	0.04 *	0.05 *
	(0.02)	(0.03)	(0.02)	(0.03)
UNIVH	–0.07**	–0.07***	–0.20***	–0.19***
	(0.02)	(0.02)	(0.03)	(0.03)
CENTRALH	–0.06**	–0.06***	–0.08***	–0.08***
	(0.02)	(0.02)	(0.02)	(0.02)
CCH	–0.09**	–0.08***	–0.12***	–0.12***
	(0.02)	(0.02)	(0.02)	(0.02)
COUNTYH	0.04*	0.03**	0.00	–0.00
	(0.04)	(0.02)	(0.02)	(0.02)
Y1996	–	–0.00	–	–0.00
		(0.04)		(0.04)
Y1998	–	–0.04**	–	–0.02
		(0.02)		(0.02)
Y2000	–	–0.02*	–	–0.05***
		(0.01)		(0.02)

N (total number of observations)	92	92	92	92
–2 Log likelihood	–485.8	–494.4	–433.2	–440.8

* = $p \leq 0.10$ ** $p \leq 0.05$ *** = $p \leq 0.01$

Table 6. Analysis of patient satisfaction. Estimates (standard error)

	General satisfaction		Information		Doctor Services		Nursing Services	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	85.43***	86.40***	75.27***	79.22***	82.86***	84.61***	90.21***	92.74***
	(1.61)	(2.18)	(2.53)	(2.40)	(1.84)	(2.49)	(1.48)	(2.00)
BUD	–0.46	–0.89	0.92	–0.30	–0.14	–0.77	–0.29	–0.81
	(0.46)	(0.55)	(0.72)	(0.60)	(0.53)	(0.63)	(0.43)	(0.50)
OUT	–0.15	–0.10	0.18	–0.06	–0.11	–0.03	–0.28**	–0.27**
	(0.12)	(0.13)	(0.19)	(0.14)	(0.14)	(0.15)	(0.11)	(0.12)
ABF	0.66	0.64	–1.99*	0.03	0.23	–0.36	0.70	–0.53
	(0.66)	(1.29)	(1.04)	(1.42)	(0.76)	(1.48)	(0.61)	(1.19)
DEPT	1.15***	1.15***	0.50	0.50	1.21	1.21	–0.17	–0.17
	(0.41)	(0.41)	(0.65)	(0.45)	(0.48)	(0.47)	(0.38)	(0.38)
WAITTIME	–0.14***	–0.13***	–0.24***	–0.14***	–0.15***	–0.13***	–0.05	–0.02
	(0.05)	(0.05)	(0.07)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)
UNIVH	–0.62	–0.55	–1.08	0.24	1.16	1.28	–1.34	0.95
	(1.01)	(1.03)	(1.59)	(1.14)	(1.16)	(1.18)	(0.93)	(0.95)
CENTRALH	–2.19***	–2.15***	–1.52	–0.88	–0.81	–0.71	–0.87	–0.60
	(0.72)	(0.74)	(1.14)	(0.82)	(0.84)	(0.85)	(0.67)	(0.68)
CCH	–0.87	–0.76	–0.23	0.49	1.27	1.44*	–0.56	–0.28
	(0.69)	(0.71)	(1.08)	(0.78)	(0.79)	(0.80)	(0.64)	(0.65)
COUNTYH	–1.01	–1.08	0.21	–0.75	–1.51	–1.49*	0.86	0.87
	(0.75)	(0.75)	(1.18)	(0.83)	(0.86)	(0.86)	(0.69)	(0.69)
Y1996	–	–0.62	–	–0.91	–	–1.48	–	–2.35
		(1.60)		(1.76)		(1.83)		(1.47)
Y1998	–	–1.11	–	–0.35	–	–1.78*	–	–1.09

		(0.78)		(0.85)		(0.89)		(0.71)
Y2000	–	–0.69	–	–9.43***	–	–0.47	–	–1.11
		(0.66)		(0.72)		(0.75)		(0.60)
N (tot number of obs)	184	184	184	184	184	184	184	184
–2 Log likelihood	902.7	900.1	1068.9	935.2	952.9	948.7	872.6	867.7

* = $p \leq 0.10$ ** $p \leq 0.05$ *** = $p \leq 0.01$